



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

PRELIMINARY ISSUE

Part #8

D5611-1
Job Sheet 183493

Accounting Job RD17-1048-01



**POSITIVE
RECALL**

Part No: D5611-1

Job Qty: 1 ea

Part Name: EC130 Skidtube



Part Weight: 0 lbs

Job Created: 9/19/18

Due Date: 9/28/18

Type: R+D

Status: Scheduled

Job Tracking No:

Created By: Marie Lajeunesse

Description:

Note: D5611 REVA.10 IPP REV:A 18.06.20 NEW ISSUE DD VERF:JFS

Ship Via:

POSITIVE RECALL

EFFECTIVE SEP 19 2018 AUTH 9-89

RELEASED DAS Priority: Medium

9-89 @low A

ECU18-317

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
110	Purchasing	1 pcs		9/28/18	0.00	0.00	Purchasing		<u>18</u> SEP 19 2018
120	Packaging	1 pcs		9/28/18	0.00	0.00	Packaging2		<u>18</u> SEP 19 2018
130	QC	1 pcs		9/28/18	0.00	0.00	QC6		<u>38</u>
140	Packaging	1 pcs		9/28/18	0.00	0.00	Packaging3-1		<u>9-89</u>
150	QC21-FG	1 Ea		9/28/18	0.00	0.00	QC21		<u>21</u> OCT 29 2018

Part Op 110 - Issue P/O to Parker Fab: 040303. Manufacture D5611-1 as per dwg (Bend,Swag, Remove excess material
Descriptions: after bending) **Ship extrusion D6031-120** ***AS PER DWG NOTE 10, EXTREME CARE MUST BE TAKEN TO
PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE
FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS.*** Material release note is required
120 - Ensure material release note is attached

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6031-120	Tube, Seamless	1 Ea (1 ea)	110-Purchasing	<u>5111335</u>
D5611-1P	EC130 Skidtube	1 pcs (1 ea)	120-Packaging	<u>5111331</u>

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
110-Purchasing	D6031-120	1	40	0
120-Packaging	D5611-1P	1	0	0

Part Specifications



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

could not be found.

Plex 9/19/18 7:47 AM Dart.lajeunesse.marie

Container No: S111340



Part: D5611-1

Job No: 183493

Serial No/Batch: S111340

Revision: A10

Inspector:

Exp Date:

Instructions:

Date: 09/19/18

DQA: _____ Date: _____

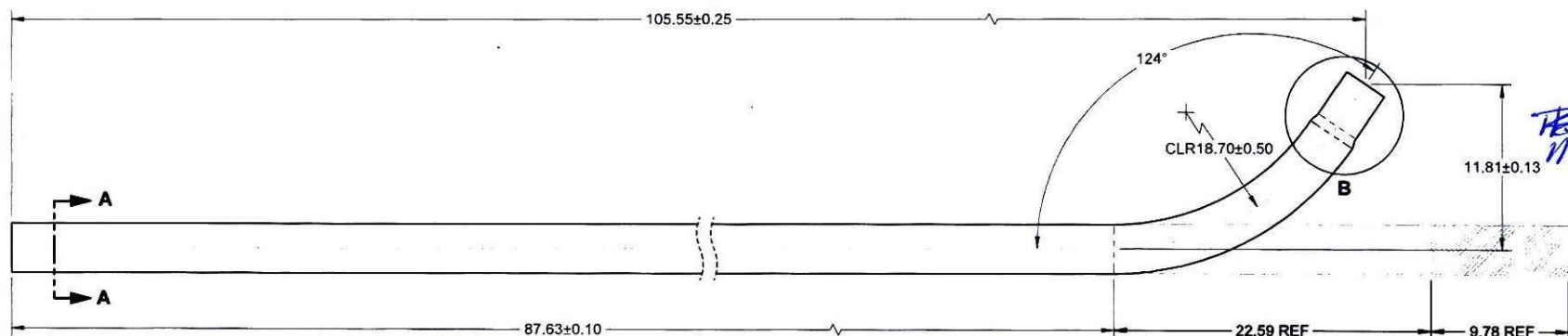


WORK ORDER NON-CONFORMANCE / UPDATE

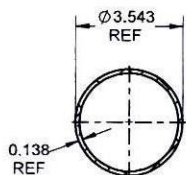
QA Closed: _____ Date: _____

Work Order update only ☐

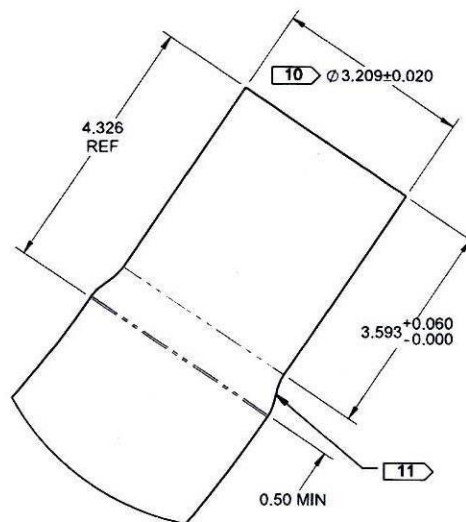
Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QS1042) Approval	
Description Work Order Deviation			Disposition		
			Completed By		
			Lead hand / Supervisor Approval Verification		
			QC / QA Coordinator Approval		
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					



D5611-1 EC130 SKIDTUBE



SECTION A-A
SCALE 2X



DETAIL B
SCALE 4X

NOTES:

- 1) MATERIAL: MAKE FROM D6031-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.41lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 10) SWAGE 3.593 +0.060/-0.000 AT THE BENT END OF THE TUBE TO $\phi 3.209 \pm 0.020$
- 11) SWAGED TRANSITION MUST BE SMOOTH, GRADUAL, AND WITHOUT VISIBLE DISCONTINUITIES

SHOP COPY
 RETURN TO
 ENGINEERING
 UNCONTROLLED COPY
 SUBJECT TO AMENDMENT
 WITHOUT NOTICE
 WORK ORDER
 NO. 183493 M-5
 18-09-19

PRELIMINARY ISSUE

A		NEW ISSUE		ZF	18.05.07
REV.		DESCRIPTION		BY	DATE
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA			
DRAWN	ZF				
CHECKED	NO	DRAWING NO.	REV. A10		
MFG. APPR.	DP	D5611	SHEET 1 OF 1		
APPROVED		TITLE	SCALE		
DE APPR.		EC130 SKIDTUBE	NTS		
DATE	18.05.07	COPYRIGHT © 2018 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040303**

Supplier: PAR005-VU
Parker Fabrication Inc
501 East Courtland
Morton, IL 61550-9043 USA
Phone: 309-266-8413
Fax: 309-266-7231

PO No: PO040303
PO Date: 6/22/18
Due Date: 9/21/18
Purchase Order Revision: 2
Revision Date: 9/13/18
Ship-To Contact: Hemmerich, Steven
Phone: 613-632-5200 Ext: 281
shemmerich@dartaero.com

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Pynt Terms: Net 30
Freight Terms: Collect
Special Comments:

Items

Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
1		D5611-1P			EC130 Skidtube First Article Inspection. Expedite charges included in price. Forward quality docs to buyer prior to shipment	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X SEP 19 2018 w/o183493													

DAS
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9-89

Line Item Note Advance notice required for Quality audit.

1 X	SEP 19 2018	w/o183486	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018	w/o183487	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018	w/o183488	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018	w/o183489	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018	w/o183490	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018	w/o183491	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018	w/o183492	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
Sub Total:						8	0	8		\$4,022.00

Grand Total: \$4,022.00

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 9/19/18 8:08 AM dart.hemmerich.steven



Parker Fabrication, Inc.
501 East Courtland
Morton, IL 61550-9043

Ph: 309.266.8413

Fax: 309.266.7231

ot 2
Pack List

Number: **119663**

Date: 17-Sep-18

Dart Aerospace
1270 Aberdeen St
Hawkesbury, ON K6A 1K7
Canada

Ship To

Steven Hemmerich
Dart Aerospace
1270 Aberdeen St
Hawkesbury, ON K6A 1K7
Canada

Ph: 1 613 632-5200

Ph: 1 613 632-5200

Terms		Ship Via	
		Freight Collect	
Quantity	Description	Rev:	
8 ea	Part: EC130SKID EC130 Skidtube rev. A10 SO: 69748	PO: PO040303	Line: 001
4 ea	Part: EC130FWD EC130 Fwd X Tube rev. A9 SO: 69748	PO: PO040303	Line: 002
Thank you for your business!			

DAS
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9-89



Certificate of Conformance (CoC)

Form F-4003
Page 1 of 1
Last Revised:
3/09/2018

Supplier Name: Parker Fabrication
Supplier Number: _____
Part Description: EC130 Skidtube

Part Number: D5611
Drawing Number: D5611 Revision: A10

Purchase Order #: PO040303
Quantity: 8
Serial Number(s): 207294 (if applicable)
Lot/Heat Number: S078761 (if applicable)

All technical requirements of the contract are satisfied. Quality and performance are in accordance with the contract, the specifications, and all references and associated contractual drawings and documents.

I, as a supplier to Dart Aerospace LTD, acknowledge and certify the material covered under this document is produced in accordance with the following:

- ☒ All Contractual "Flow Down" Requirements
- ☒ Supplier Standards Guide
- ☒ Global Supplier Quality Manual
- ☒ Product Conformance
- ☒ Free of Counterfeit Material

(Acknowledge by marking the boxes)



Signature

Quality Manager
Title

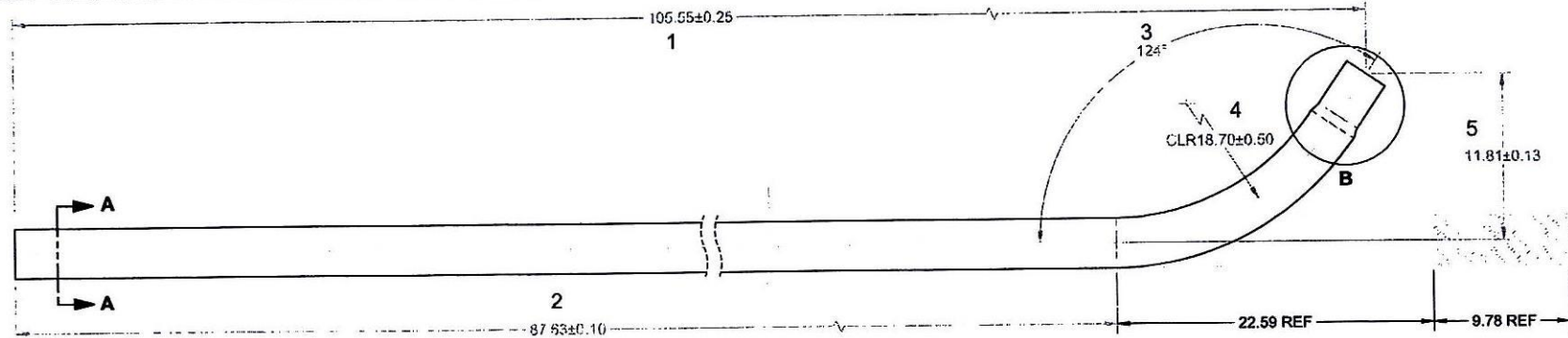
9/17/2018
Completion Date

DAS
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9-89

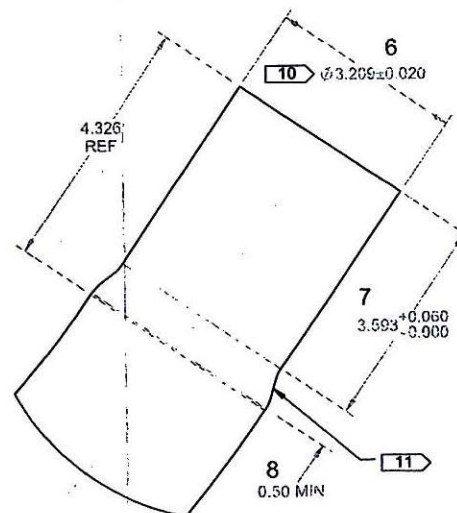
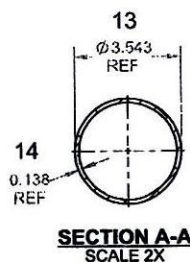
This certifies the parts/items/materials identified above conform to all applicable drawings and/or specifications as evidenced by reports or other documentation on file and all other purchase order and quality requirements have been met.

Production Part Approval Dimensional Test Results

[illegible]



D5611-1 EC130 SKIDTUBE



**DETAIL B
SCALE 4X**

NOTES:

- 1) MATERIAL: MAKE FROM D6031-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.41lbs
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 12) SWAGE 3.593 +0.060/-0.000 AT THE BENT END OF THE TUBE TO Ø3.209+/-0.020
- 13) SWAGED TRANSITION MUST BE SMOOTH, GRADUAL, AND WITHOUT VISIBLE DISCONTINUITIES

PRELIMINARY ISSUE

A		NEW ISSUE		ZF		18.05.07	
REV.		DESCRIPTION		BY		DATE	
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		REV. A10		SHEET 1 OF 1	
DRAWN	ZF						
CHECKED	NO						
MFG. APPR.	DP						
APPROVED							
DE APPR.		DRAWING NO. D5611		SCALE		NTS	
DATE	18.05.07	TITLE EC130 SKIDTUBE		COPYRIGHT © 2018 BY DART AEROSPACE LTD		THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

Entered: _____ Date: _____



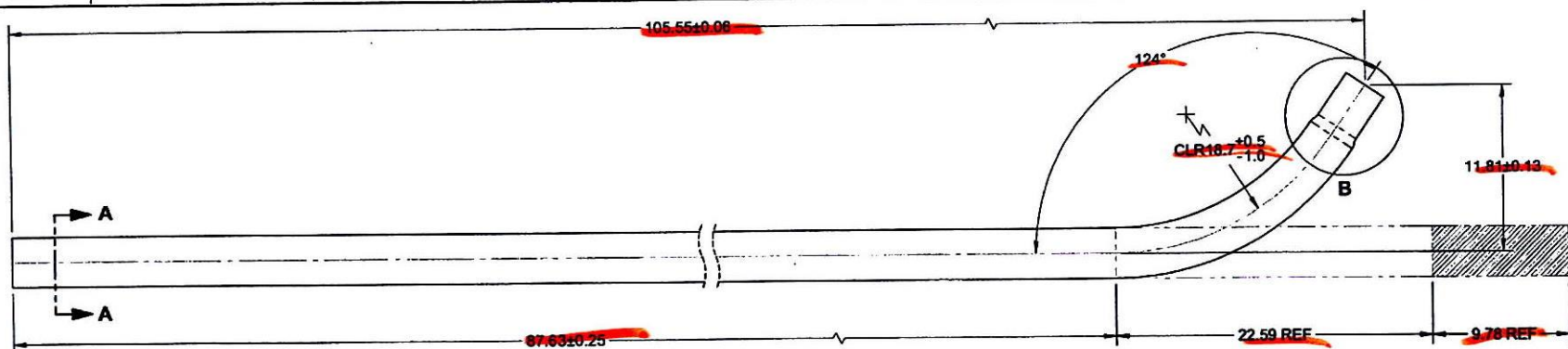
WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

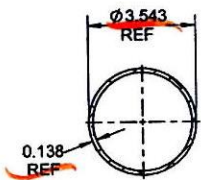
Route update only ☐

Job: <u>85 K3 493</u> Part No. <u>D5611-1</u>	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☒ Water Jet ☐ Supplier Quality ☒		
Date : <u>18-10-26</u>	Sequence #: <u>130</u>	QTY Affected : _____		MRB (QS1042) 1 NSP 12 <u>18/10/25</u>
Description Work Order Deviation D5611-1 was supplied unfired, both aft and fwd ends Swage OD is out of tolerance due to design change after manufacture		Disposition F&I deviations are due to lack of trimming, part will be trimmed on next w/o Acceptable Swage O.D. is acceptable No effect on over geometry or stiffness of assembly		Completed By 1 NSP 12 <u>18/10/25</u> Lead hand / Supervisor DAS 9 9-89 <u>18-10-26</u> QC / QA Coordinator DAS 9 9-89 <u>18-10-26</u>
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread		
Other/Details:				

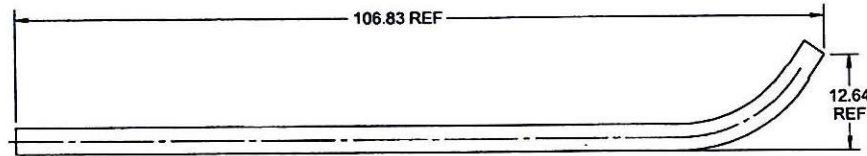
DTC



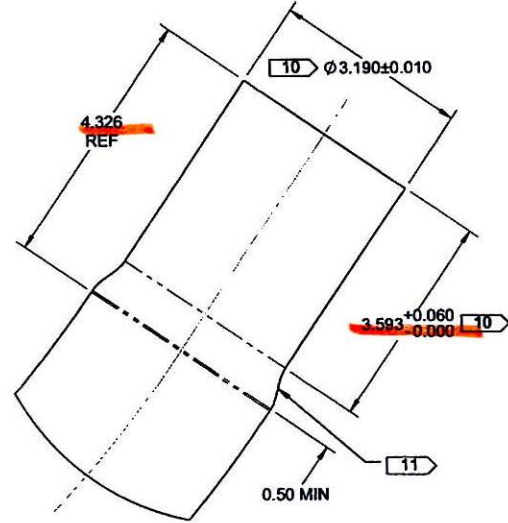
D5611-1 SKIDTUBE (EC130)



SECTION A-A
SCALE 2X



AUXILIARY VIEW
SCALE 0.5X



DETAIL B
SCALE 4X

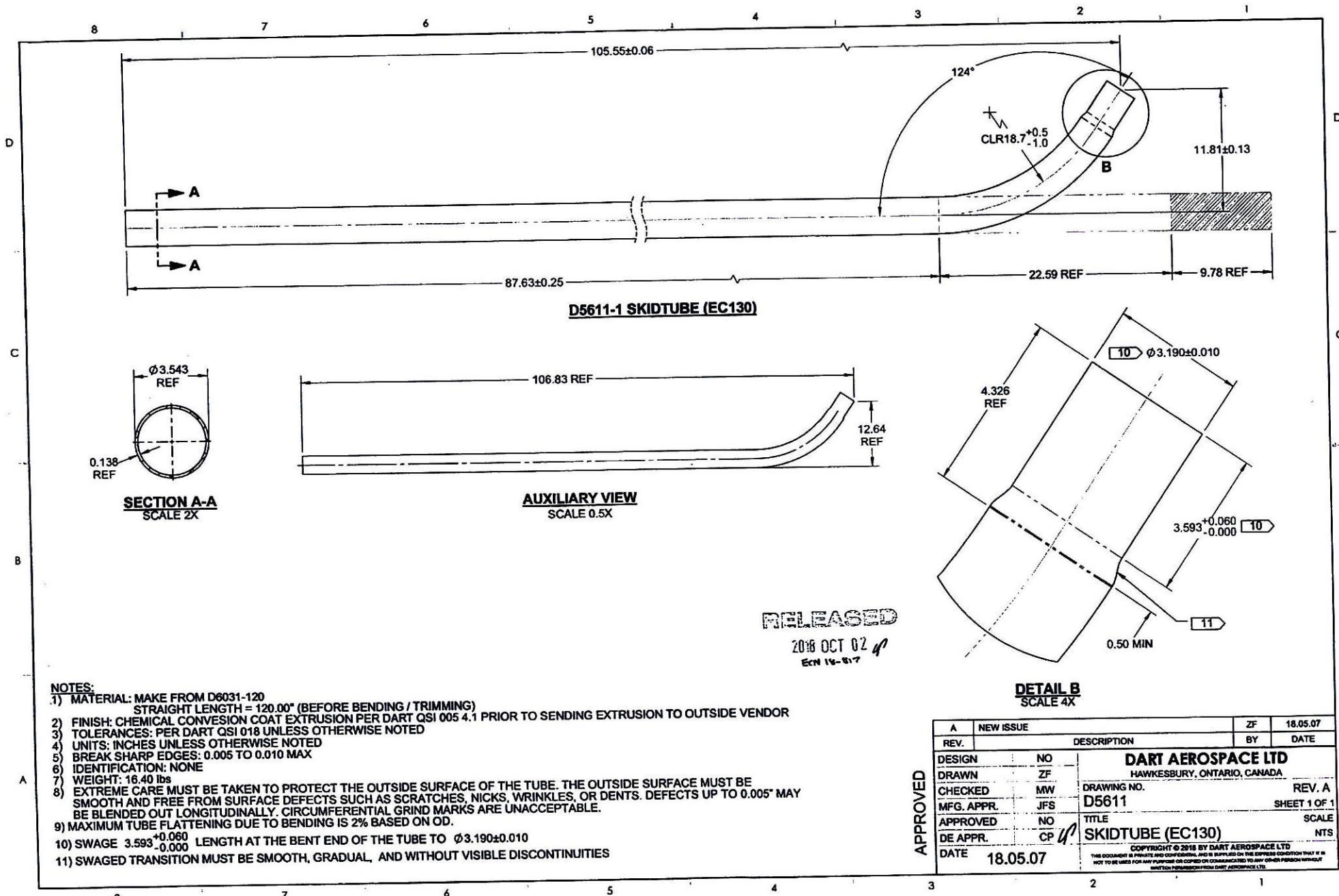
RELEASED
2018 OCT 02
ECN 14-817

NOTES:

- 1) MATERIAL: MAKE FROM D6031-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT EXTRUSION PER DART QSI 005 4.1 PRIOR TO SENDING EXTRUSION TO OUTSIDE VENDOR
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.40 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 10) SWAGE 3.593±0.060 LENGTH AT THE BENT END OF THE TUBE TO $\phi 3.190 \pm 0.010$
- 11) SWAGED TRANSITION MUST BE SMOOTH, GRADUAL, AND WITHOUT VISIBLE DISCONTINUITIES

APPROVED

A		NEW ISSUE		ZF	18.05.07
REV.		DESCRIPTION		BY	DATE
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA			
DRAWN	ZF				
CHECKED	MW	DRAWING NO. D5611		REV. A	
MFG. APPR.	JFS			SHEET 1 OF 1	
APPROVED	NO	TITLE SKIDTUBE (EC130)		SCALE	
DE APPR.	CP			NTS	
DATE	18.05.07	COPYRIGHT © 2018 BY DART AEROSPACE LTD		THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR DISSEMINATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	



NOTES:

- 1) MATERIAL: MAKE FROM D6031-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT EXTRUSION PER DART QSI 005 4.1 PRIOR TO SENDING EXTRUSION TO OUTSIDE VENDOR
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- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.40 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 10) SWAGE 3.593+0.060/-0.000 LENGTH AT THE BENT END OF THE TUBE TO Ø3.190±0.010
- 11) SWAGED TRANSITION MUST BE SMOOTH, GRADUAL, AND WITHOUT VISIBLE DISCONTINUITIES

RELEASED

2018 OCT 02
ECN 14-817

DETAIL B SCALE 4X

A	NEW ISSUE	ZF	18.05.07
REV.		DESCRIPTION	BY DATE
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	REV. A
DRAWN	ZF		
CHECKED	MW	DRAWING NO. D5611	SHEET 1 OF 1
MFG. APPR.	JFS	TITLE	SCALE
APPROVED	NO	SKIDTUBE (EC130)	NTS
DE APPR.	CP		
DATE	18.05.07	COPYRIGHT © 2018 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	